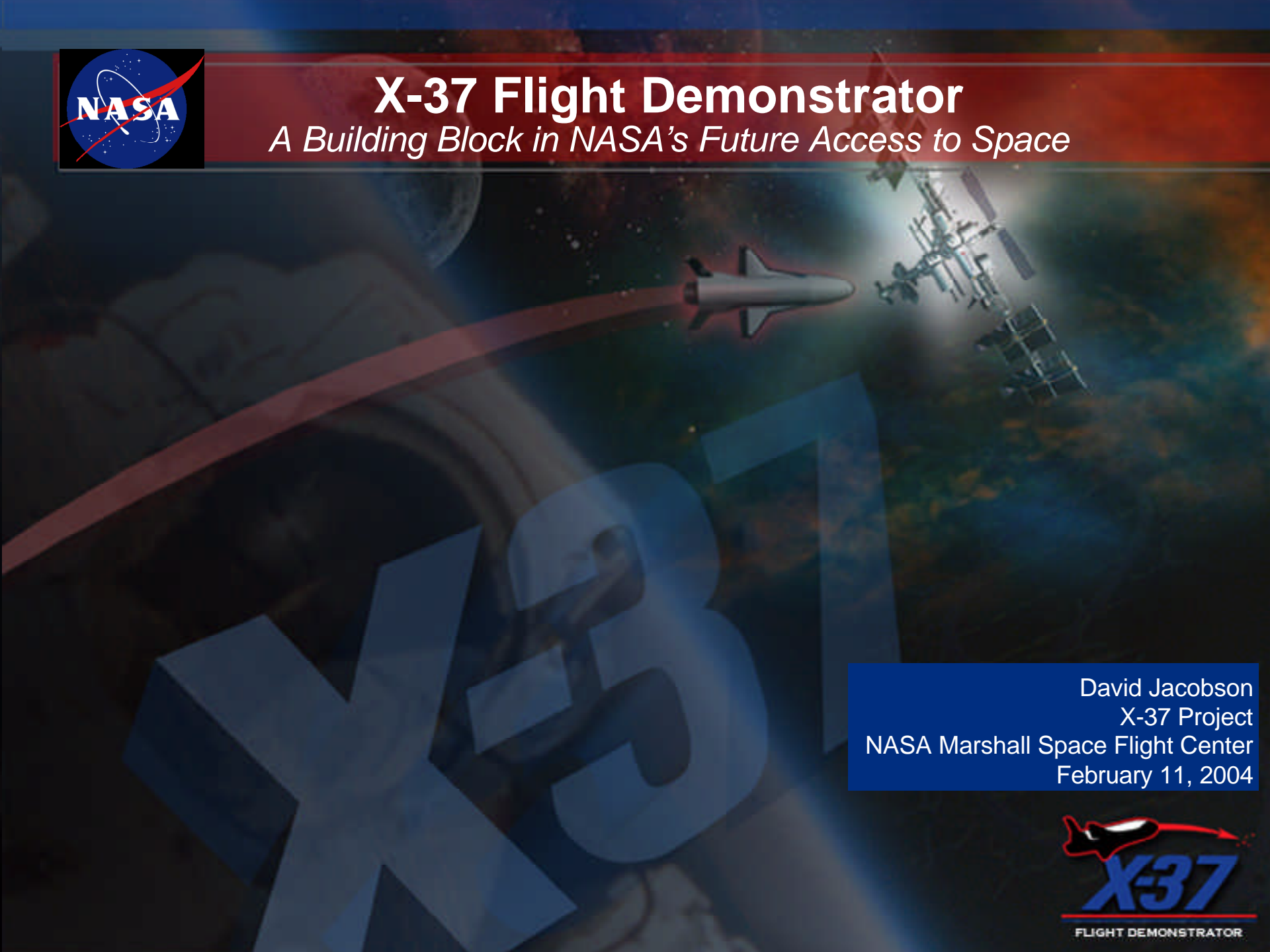


# X-37 Flight Demonstrator

*A Building Block in NASA's Future Access to Space*



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# NASA Vision & Mission

## Vision

*To improve life here  
To extend life to there  
To find life beyond*

## Mission

*To understand and protect our home planet  
To explore the universe and search for life  
To inspire the next generation of explorers ... as only NASA can*

# X-37

## Vision & Mission

### Vision

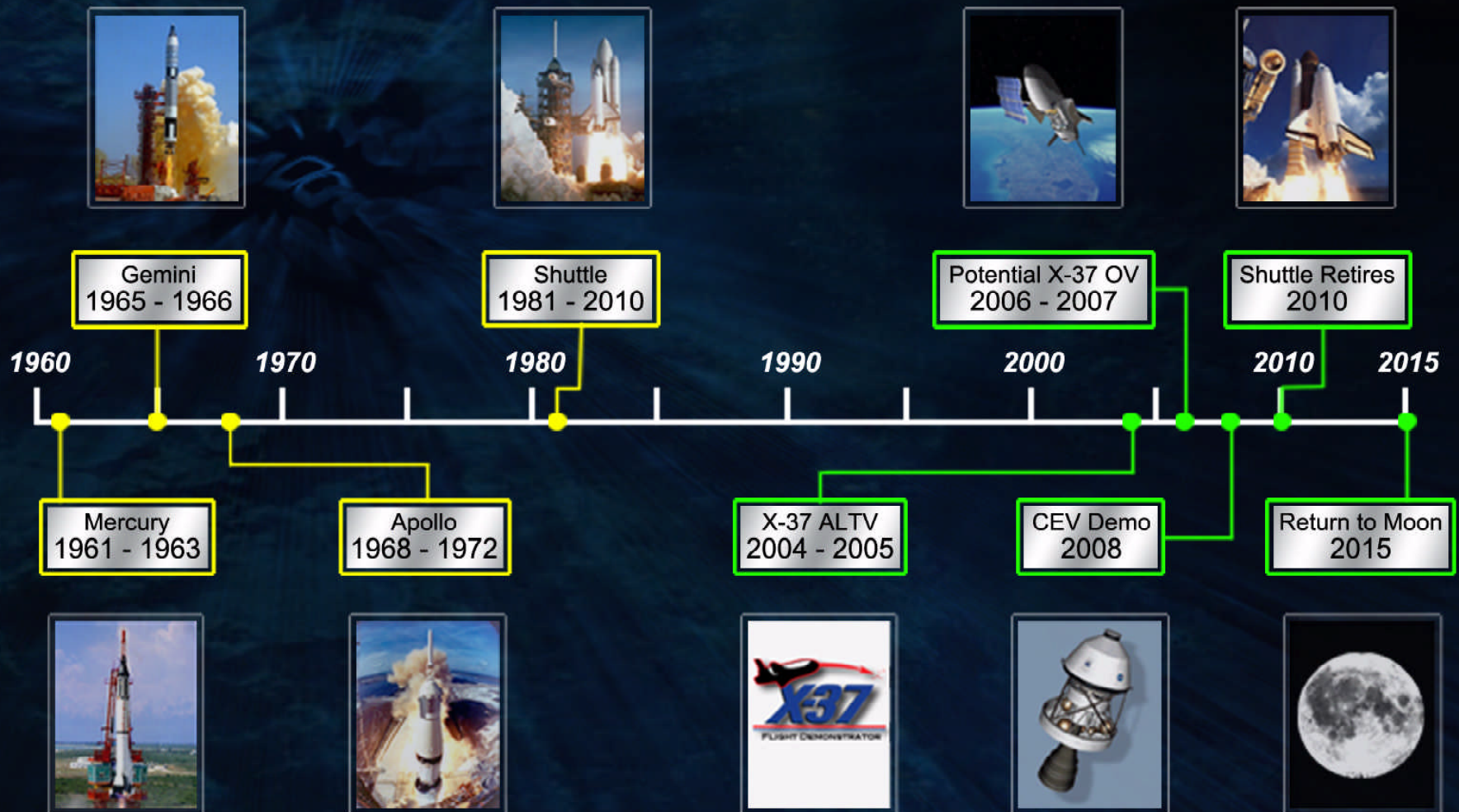
- *Revitalize Our Nation's Capability to Build and Operate an Integrated Space Transportation System*

### Mission

- *Generate data to mature critical technologies that enable future space transportation systems and conduct experiments in flight environments that are beyond the capability of existing platforms, thereby extending our Nation's reach in space.*
- *Reduce the risk of developing new generations of safe, reliable, and affordable space transportation to inspire and empower a new generation of explorers.*
- *Provide an automated, reusable testbed for critical technologies and a platform for science payloads that will improve our understanding of life on Earth.*



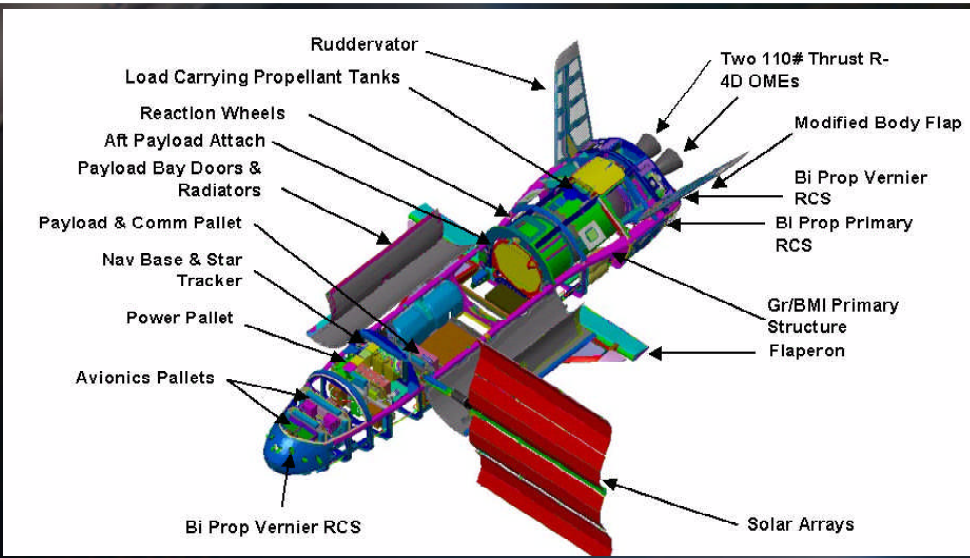
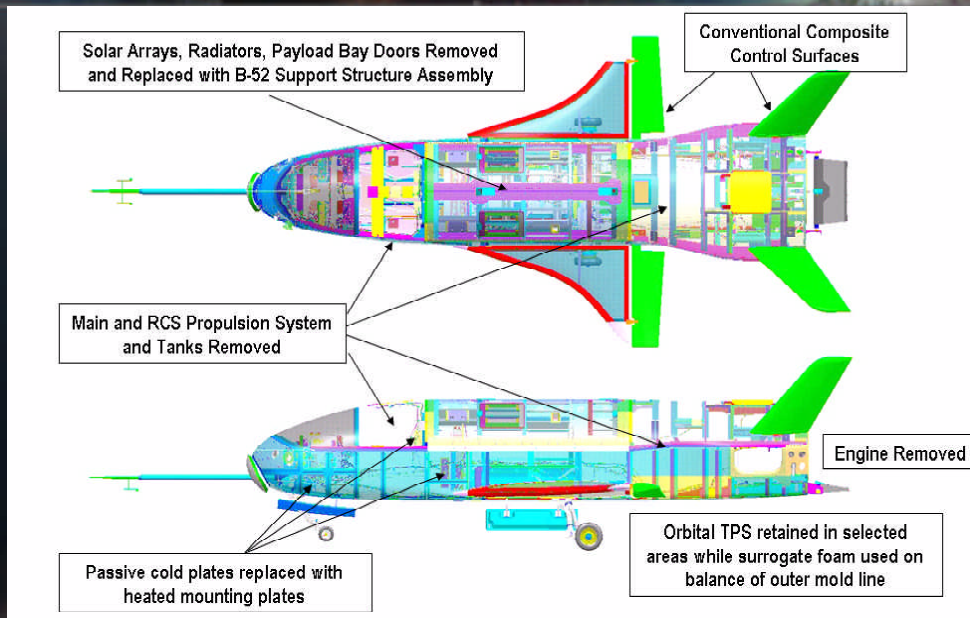
# 30 Years Since Last Major Space Transportation System Developed



# What is X-37?

- A fully automated winged vehicle designed to go into low-Earth orbit, maneuver, reenter Earth's atmosphere, and glide back to a landing site
- Nearly 27.5 feet long, 15-foot wingspan, and weighs about 5 tons at launch
- Experiment bay is 7 feet long and 4 feet in diameter and can carry 500 pounds
- Project Planning includes the development of 2 vehicles
  - Approach and Landing Test Vehicle (ALTV)
  - Orbital Vehicle (OV)

# ALTV Comparison to OV





# Phased Approach to Orbital Flight Demonstrations

X-40A Completed Seven  
Successful Flights in 2001



Drop Tests

Approach and Landing  
Test Vehicle Flies 2004



B-52 will carry ALTV up to 40,000 feet



Streamlined Ground Operations

Orbital Vehicle  
Flies TBD



On Orbit



EELV



# Prototype Reusable Spacecraft

## Benefits/Relevance

- Automated (unmanned) flight demonstration
- High-payoff technology maturation and validation in real-world environments
- Payload capacity for science, Earth observation, and hardware validation
- Hands-on experience for a new generation of engineers and aerospace professionals
- Long-duration orbital vehicle and return capability to support validation of long-duration vehicle requirements (engineering specifications, natural and induced environments, hardware/technology development, etc.)



# X-37 Applications

- **Reentry Environment Demonstrator (i.e., Advanced Thermal Protection Systems)**
- **Long Term Orbital Operations and Automated Reentry & Landing**
- **Serves as a testbed to transition technologies and raise readiness levels**
- **Provides breakthrough reentry data in the Mach 10-25 range & Demonstrates maneuvering at high speeds**
- **ALTV Reduces Risk to the OV Flight Program**

# Partners



# Major Milestones

- **X-40A Subscale Demonstrator (suborbital, 15,000 ft): Summer 2001**
  - Seven successful flights that validated:
    - Navigation sensors
    - Aerodynamics
    - Approach & Landing Guidance, Navigation, & Control
    - Streamlined Flight Operations Control Center
  - Risk mitigation for X-37
- **Approach & Landing Test Vehicle (suborbital, 40,000 ft): 2004**
  - Five drop-tests planned from B-52
  - Precursor to orbital flight
  - Simulates orbital vehicle flight trajectories & landing patterns
- **Orbital Vehicle: TBD Pending Agency Decisions**
  - Carried on Expendable Launch Vehicle
  - Multiple Orbital Vehicle flights possible
  - Long duration mission (270 days) for validation of flight capabilities and experiments, and testbed activities

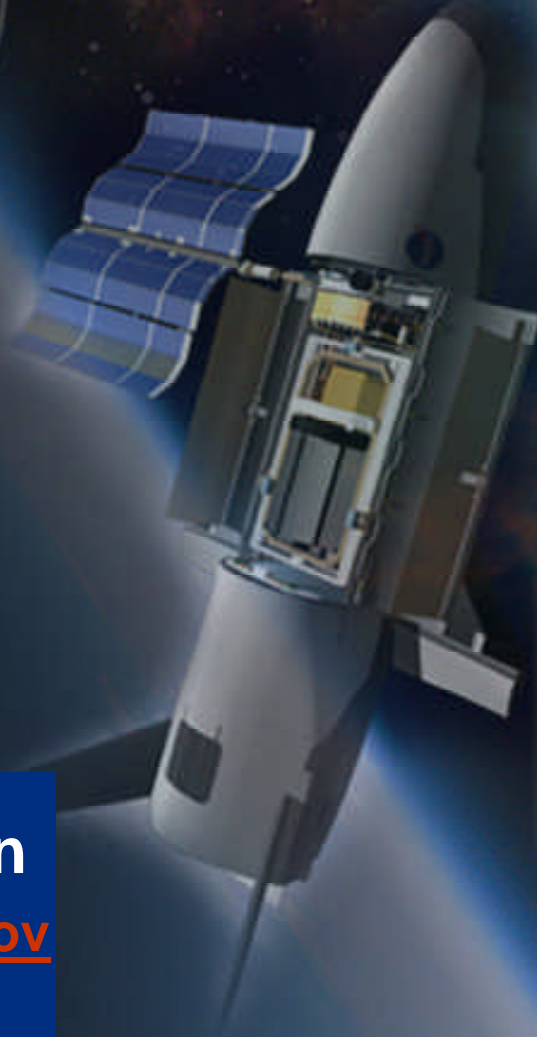


# Summary

- Approach and Landing Test Vehicle on track for flight tests in late 2004
- Orbital Vehicle technologies meeting commitments
- Orbital Vehicle design & development complete to PDR; on hold pending funding/policy decisions

# X-37 Flight Demonstrator

## *Technology Leadership for Space Transportation*



**For More Information**

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